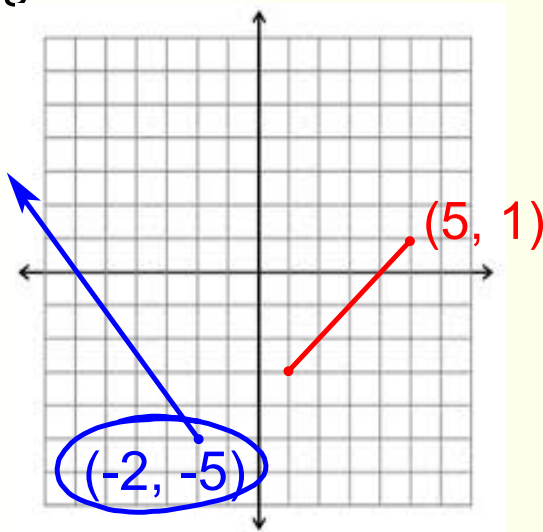


Alg. 2 Warm Up # 8-1

Write an equation for each graph, state the domain and range:

1.



red:

$$f(x) = x - 4 ; 1 \leq x \leq 5$$

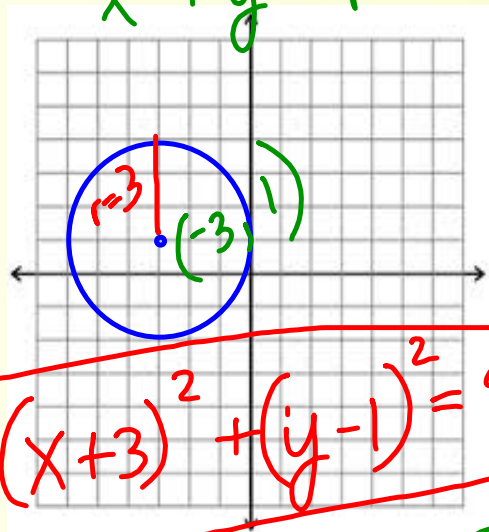
blue:

$$f(x) = -\frac{5}{4}x - \frac{15}{2} ; x \leq -2$$

$$D: x \leq -2 \text{ and } 1 \leq x \leq 5$$

$$R: y \geq -5$$

2.



$$D: 0 \leq x \leq 6 \quad R: -2 \leq y \leq 4$$

$$x^2 + y^2 = r^2$$

$$(x+3)^2 + (y-1)^2 = 9$$

$$y - y_1 = m(x - x_1)$$

$$y + 5 = -\frac{5}{4}(x + 2)$$

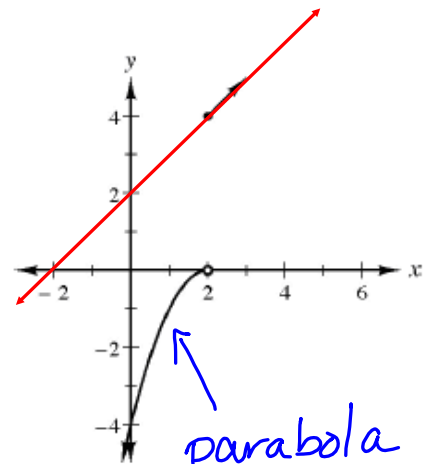
$$y + 5 = -\frac{5}{4}x - \frac{5}{2}$$

$$y = -\frac{5}{4}x - \frac{15}{2}$$

HW Questions:

Preview

- 2-162. Write a set of equations for the piecewise-defined function shown on the graph at right. Be sure to include the domain for each part of the function.



transformations of

$$y = x^2 :$$

reflect in x-axis

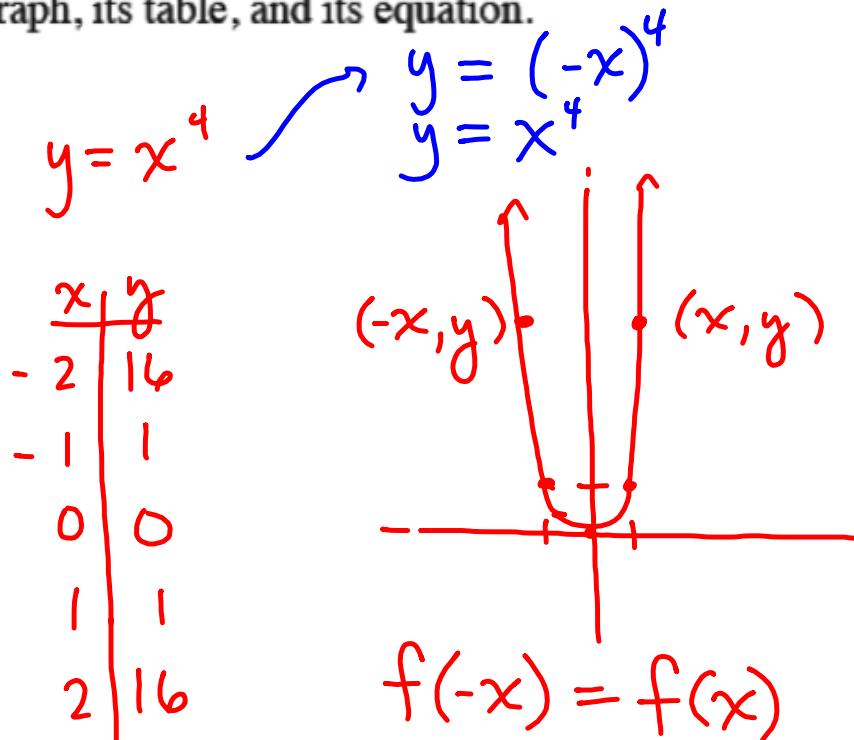
R + 2

same shape as parent, so no stretch or compression

$$y = -(x - 2)^2$$

parabola
parent:
 $y = x^2$

- 2-163. Write an equation for a function that is even.
Then explain how you can tell it is even from
its graph, its table, and its equation.



- 2-164. Use your knowledge of absolute value functions to find the equation of the graph at right.

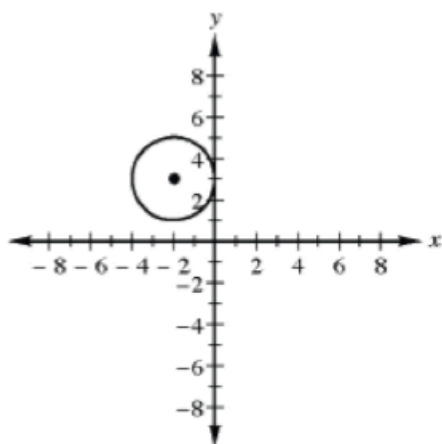
parent:
 $y = |x|$

$$y = a|x - h| + k$$

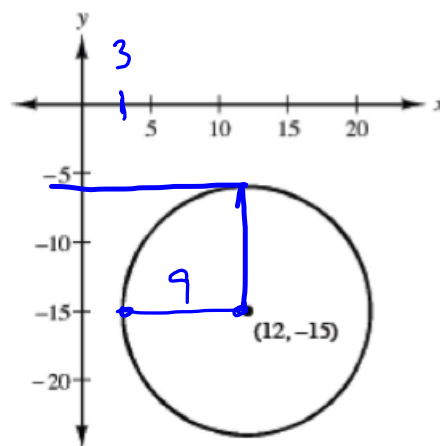


2-165. Write an equation for each of the circles shown in the graphs below.

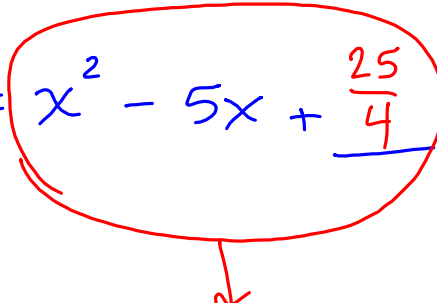
a.



b.



2-166. Use the technique of completing the square to express $y = x^2 - 5x + 7$ in graphing form and state the vertex.

$$y = x^2 - 5x + \frac{25}{4} + 7 - \frac{25}{4}$$


$$y = \left(x - \frac{5}{2}\right)^2 + \frac{7}{1} \cdot \frac{4}{4} - \frac{25}{4}$$

$$y = \left(x - \frac{5}{2}\right)^2 + \frac{3}{4}$$

$$\text{vertex: } \left(\frac{5}{2}, \frac{3}{4}\right)$$

2-167

Shortcut Shuneel claims he has a shortcut for finding the vertex of a parabola. While using his shortcut on $y = 2x^2 + 3x + 1$, he ended up with $y = 2(x + \frac{3}{4})^2 - \frac{7}{8}$. Is Shuneel's new equation correct? Why or why not?

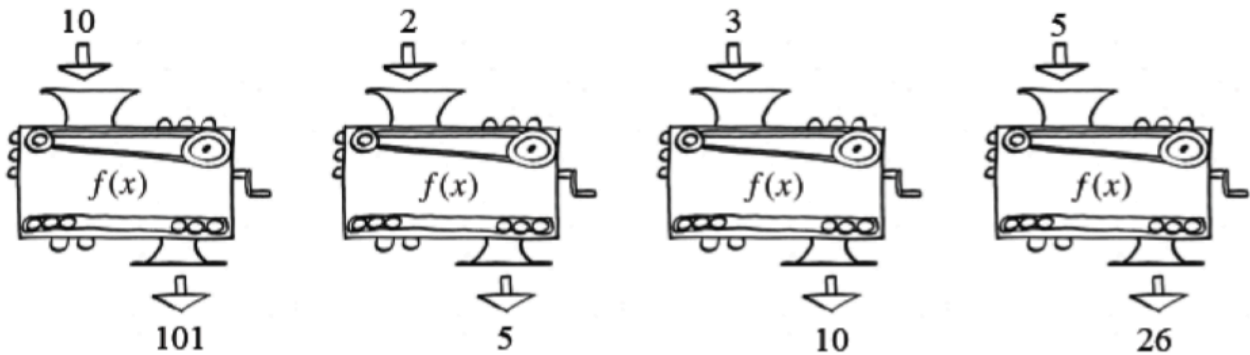


$$y = 2\left(x^2 + \frac{3x}{2} + \frac{9}{16}\right) + \underbrace{1 - \frac{9}{8}}_{\frac{8}{8} - \frac{9}{8}}$$

$$y = 2\left(x + \frac{3}{4}\right)^2 - \frac{1}{8}$$

$$\left(-\frac{3}{4}, -\frac{1}{8}\right)$$

- 2-168. Remember function machines? Each of the following pictures shows how the same machine changes the given x -value into a corresponding $f(x)$ value. Find the equation for this machine.



x	2	3	5	10
y	5	10	26	101

$$f(x) = x^2 + 1$$

2-169. If $x^2 + kx + 18$ is factorable, what are the possible values of k ?

$$(x \quad \quad \quad x) \quad \quad \quad$$

$$1 \cdot 18$$

$$2 \cdot 9$$

$$3 \cdot 6$$

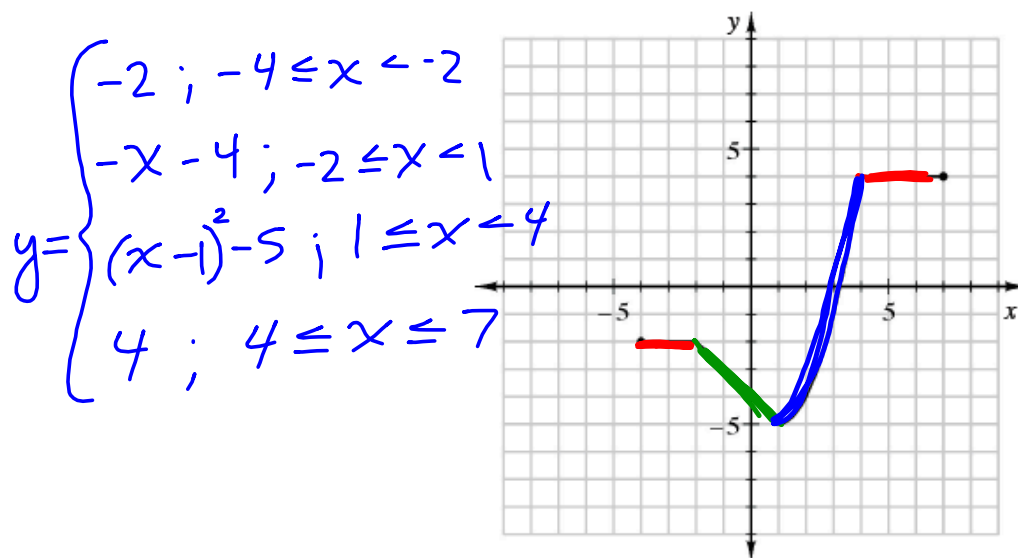
$$1x + 18x = 19x \quad -1 \cdot -18$$

$$-2 \cdot -9$$

$$-3 \cdot -6$$

Friday's CP's:

2-155. Here is another piecewise-defined function, $F(x)$, defined in the domain $-4 \leq x \leq 7$ by the graph below.

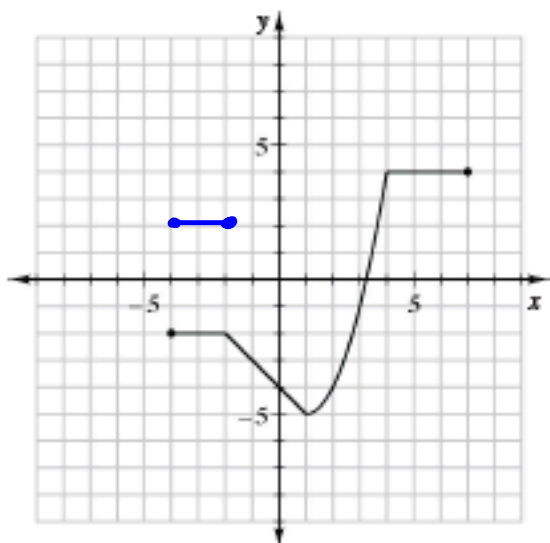


- a. Because there is no single equation that represents the whole graph, it is often useful to make a more complete table than you might usually make. On your paper, fill in a table for the function like the one below.

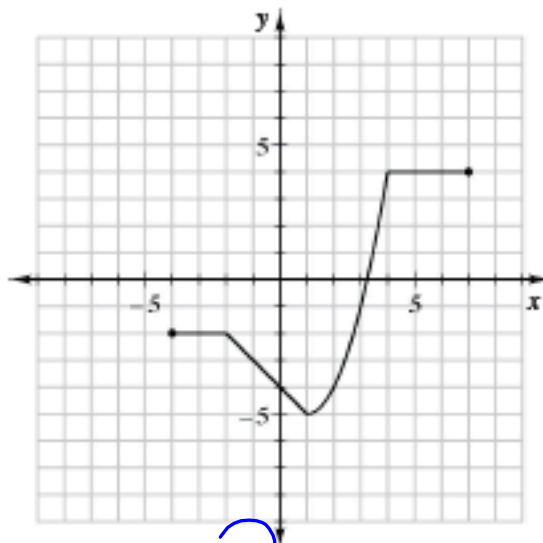
x	-4	-3	-2	-1	0	1	2	3	4	5	6	7
$F(x)$	-2	-2	-2	-3	-4	-5	-4	-1	4	4	4	4

- b. Use the graph and the table that you made to write equations for each part of the piecewise-defined function. Be sure to state the domain for each part.

Lesson 2.2.5A Resource Page

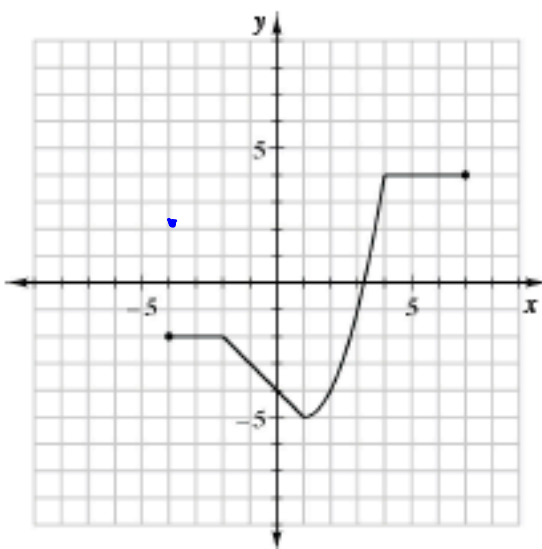


x	-4	-3	-2	-1	0	1	2	3	4	5	6	7
$F(x)$	-2	-2	-2	-3	-4	-5	-4	-1	4	4	4	4
$-F(x)$	2	2	2	3	4	5	4	1	-4	-4	-4	-4



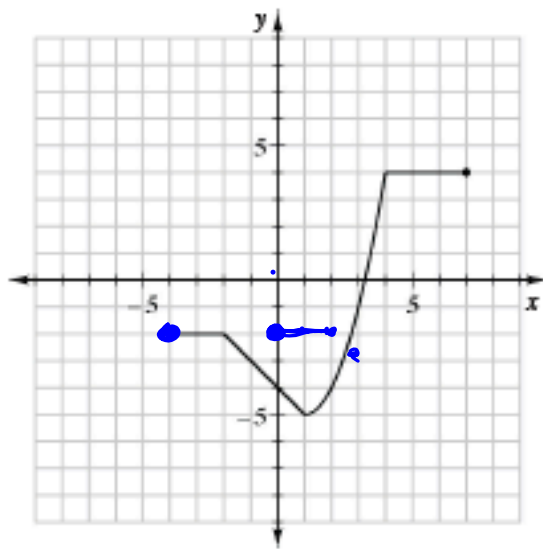
x	-4	-3	-2	-1	0	1	2	3	4	5	6	7
$F(x)$	-2	-2	-2	-3	-4	-5	-4	-1	4	4	4	4
$\frac{1}{2}F(x)$	-1	-1	-1	-1.5	-2	-2.5	-2	-0.5	2	2	2	2

reflected across x-axis → vertical compression by $\frac{1}{2}$



x	-4	-3	-2	-1	0	1	2	3	4	5	6	7
$F(x)$	-2	-2	-2	-3	-4	-5	-4	-1	4	4	4	4
$F(x)+4$	2	2	2	3	0	1	0	3	8	8	8	8

up 4



x	-4	-3	-2	-1	0	1	2	3	4	5	6	7
$F(x)$	-2	-2	-2	-3	-4	-5	-4	-1	4	4	4	4
$F(x-4)$	-2	-2	-2	-3	-4	-5	-4	-1	4	4	4	4

R + 4

Today's CP's: 2 - #157, revised (blue)

2-157. GRAPHS OF ODD AND EVEN FUNCTIONS

Your goal in this investigation is to determine whether a function is odd or even by looking at its graph.

- a. ~~Use your graphing calculator to graph the following functions, and make a quick sketch of each graph on your paper. Be sure to label each graph.~~

$$f(x) = x^2$$

$$f(x) = (x + 5)^2$$

$$f(x) = x^2 + 5$$

$$f(x) = x^3$$

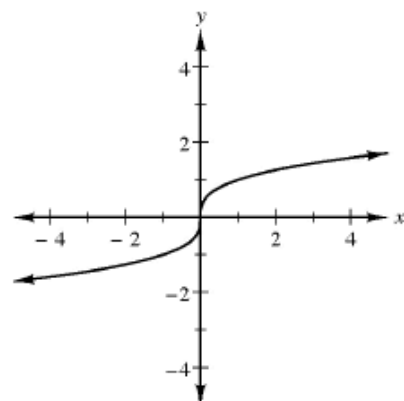
$$f(x) = (x + 5)^3$$

$$f(x) = x^3 + 5$$

$$f(x) = \frac{1}{x}$$

$$f(x) = -2.5x$$

- b. Determine which of the functions above are odd, even, or neither. ~~Can you find an efficient way to do this with your graphing calculator?~~
- c. How can you tell by looking at the graph whether a function is odd, even, or neither?
- d. Classify the function at right as odd, even, or neither. Explain.



HW: CI 2-
170 ---> 175

Quiz #5 Wednesday:

Describe transformations

Graph a parabola

Group Event Wednesday:

Situation to quadratic equation

Chapter 2 Test: Thursday